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Heavy tails and asymmetry of returns in the Russian stock market

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The paper presents the robust estimates of tail indices for financial returns and returns asymmetry in the Russian stock market. We also investigate the relation between individual characteristics of companies and the degree of heavy-tailedness and asymmetry of returns. According to our estimates, the degree of heavy-tailedness is strongly related to the liquidity of stocks and the company size. At the same time, no significant effects on estimates of the tail indices of sectoral affiliation, cross-listing, adding into quotation lists, state ownership are revealed. As for the influence of the above-mentioned factors on the asymmetry of returns, the statistical reliability of relevant models is rather low. However, certain indicators of the asymmetry are observed for medium-sized regional companies, the majority showing a heavier right tail compared to the left tail. We also discuss the implications of our findings for managerial decisions and economic modeling. Our results may be useful for risk-managers, financial regulators, investors and policy-makers.

1. Introduction

A number of macroeconomic indicators characterizing the Russian economy, including stock market performance, demonstrate high volatility compared both to developed and emerging countries (see for example, Gaddy and Ickes, 2010; Jondeau and Rockinger, 2003). Empirical studies show that the Russian market is characterized by a high enough level of sensitivity to global trends even in comparison with other BRICS countries (Aloui et al., 2011; Morales and Gassie-Falzone, 2014; Bianconi et al., 2013). A relatively modest instability in the world markets can translate into extreme price changes in the Russian stock market. This pattern of behavior is heavily influenced by structural imbalances combined with the low level of diversification of the national economy, the current level of institutional environment development, geopolitical factors, macroeconomic policies as well as myriads of other internal and external shocks capable of generating extreme changes. Large fluctuations of the stock market can have grave consequences for real economy, internal as well as external investments, cost of funding, and a number of other economic characteristics.

Numerous works in the literature indicate that distributions of many key variables in economics and finance, including financial returns and foreign exchange rates, exhibit deviations from Gaussianity, including those in the forms of *heavy tails* usually modeled using *power laws* (see the discussion and reviews in Embrechts et al., 1997; Cont, 2001; Gabaix, 2009; Ibragimov

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